

16 May 1974  
(DATE)

## MEMORANDUM FOR THE RECORD

SUBJECT: Opinion Request - *Standards and Standardization*  
*(S&T Bilateral)*Attached is self-explanatory material from the Department of State.  
May we have your opinion by 3 June 1974.

Please state degree of interest and whether we will receive requirements.

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(IMAGE)

## COMMENTS:

## DISTRIBUTION:

OSI — *no obj no rego*  
 O&R — *no obj u/mc may have rego*  
 Ellie —  
 GSS —  
 SB —  
 CRS —  
 AF — *141 obj*  
 Army —  
 NAVY —  
 DIA —

*file**STANDARDS & STANDARDIZATIONS*

E2 IMPDET

CL BY: 007622

*Pardon*

*any comment ?*

Dr. Richard W. Roberts  
Director, U.S. National Bureau of Standards  
Washington, D.C. 20234

Dear Dr. Roberts:

I would like to express my appreciation for your remarks on the proposal of the Terms of Reference for the Working Group and detailed curriculum vitae of your colleagues.

We will forward a new version of the Terms of Reference for the Working Group in the immediate future.

I would like to bring my apologies to you for the delay in answering your letter and would like to give to you our comments concerning the proposed Working Plan, as well as the names of individuals responsible for the implementation of the Plan (Attachment).

All of the coordinators proposed to you are among the oldest workers of the USSR Gosstandart system and have made substantial contributions to the development of metrology and standardization in our country.

I would like to let you know at this time that Dr. Tech transmitted a proposal of a possible visit to the Soviet Union of Mr. R. Trowbridge, Mr. D. L. Peyton, and Mr. F. LaQue prior to the scheduled meeting of our Working Group for the purpose of discussing topics for cooperation in the field of standardization.

We will be pleased to discuss all new proposals at a time convenient for Mr. R. Trowbridge, Mr. D. L. Peyton, and Mr. F. LaQue.

Thank you once again for your letter.

With best wishes.

Sincerely yours,

V. Boytsov, Chairman

Moscow, M-49, Lenin PR. 9  
State Committee on Standards  
of the Council of Ministers of the USSR  
Telephone: 236-40-44  
Telegram: Moscow, Gosstandart  
#32-35/896  
Dated April 4, 1974

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Remarks on the Working Plan for Scientific and Technical Cooperation in the Area of Metrology and Standardization.

Part I

Topic 1. Intercomparison of mass standards.

Gosstandart agrees with the NBS proposal to undertake this work within the framework of the International Bureau of Weights and Measures (BIPM).

Topic 2. Intercomparison of length standards.

Gosstandart agrees with the NBS proposal to undertake this work within the framework of the International Bureau of Weights and Measures (BIPM).

Topic 3. Intercomparison of pressure standards.

Gosstandart agrees with the NBS proposal for bilateral exchange of pressure measurement devices and for its part would think it desirable to start with comparison of piston gauges (working standards) with the range of  $(6 - 600) \cdot 10^5$  Pa. Gosstandart can furnish for intercomparison the following piston gauges: MP-60, MP-600, MP-2500, and MP-6000.

We do not intend to furnish sets of weights for the gauges.

Gosstandart is ready to receive for intercomparison in the fourth quarter of 1974 -- first quarter of 1975 corresponding NBS equipment for pressure measurements with the above-mentioned range, under the condition that the American side furnish in advance concrete data on its equipment (coupling sizes, etc.).

USSR Gosstandart would like to propose that it send its equipment to NBS for intercomparison in the fourth quarter of 1975 -- first quarter of 1976. The responsibility for implementation of Topic 3 rests with VNIIM, Mendeleyev on the USSR side. Responsible scientist: Candidate of Technical Sciences: I. V. Plotnikov.

Topic 4. Intercomparison of transportable volt standards.

Gosstandart agrees to accept from NBS for intercomparison in the fourth quarter of 1974 -- first quarter of 1975 -- four transportable standards (normal elements) in a thermostatic enclosure under the condition that NBS furnish ahead of time description of the transportable standards, specifications on their use in intercomparisons and data on the method of calibration used at NBS.

Gosstandart is in turn ready to forward to NBS in the fourth quarter of 1975 -- first quarter of 1976 -- four thermostatically enclosed normal elements for intercomparison.

Responsibility for the implementation of Topic 4 has been given to VNIIM, Mendeleyev on the USSR side. Responsible scientist: G. I. Galakhova.

Topic 5. Intercomparison of standards for ionizing radiation.

Gosstandart agrees with NBS proposals on the necessity for the meeting of specialists from both sides to discuss the program of intercomparison of standards in ionizing radiation. Taking account of the US interest in the measurement of absorbed radiation doses, Gosstandart is ready to undertake intercomparison of standards of absorbed radiation doses and the first to be the measurement of absorbed dose of bremsstrahlung with photon energies up to 50 MeV. In addition, Gosstandart is interested in making intercomparisons of standards of units of nuclide activity.

In order to discuss cooperative programs on the above mentioned and other topics, Gosstandart could send to NBS two specialists in the fourth quarter of 1974 - first quarter of 1975.

Responsibility for the implementation of Topic 5 has been given to VNIIM, Mendeleyev on the USSR side. Responsible scientist: Candidate of Technical Sciences V. I. Fomin.

Topic 6. Intercomparison of laser wavelengths.

Gosstandart is ready to receive at any time an NBS specialist to discuss a program of cooperative activity in the development of iodine stabilized lasers.

Responsibility for the implementation of Topic 6 has been given to VNIIM, Mendeleyev on the USSR side. Responsibility scientist: Professor G. M. Malyshev.

Topic 7. Intercomparison of thermocouples.

Gosstandart agrees with the NBS proposal for manufacture from the same material and subsequent exchange of thermocouples for intercomparison. Tentative target for exchange of thermocouples with the required documentation: fourth quarter of 1974 -- first quarter of 1975.

Responsibility for the implementation of Topic 7 has been given to VNIIM, Mendeleyev on the USSR side. Responsible scientist: B. N. Oleynik.

It is proposed that each side provide a number of specially selected and certified for stability, thermocouples manufactured from thermoelectrode material PR 30 (Pt - 70%, Rh - 30%) and PR 30 (Pt - 94%, Rh - 6%).

The diameter of the thermoelectrode wire should be 0.5 mm, the length 1500 mm. Insulating sheath is made of aluminum oxide ( $\text{Al}_2\text{O}_3 > 99.5\%$ ). Diameter of insulating sheath 4-5 mm, channel diameter not less than 0.8 mm. The length of the sheath not less than 500 mm.

Gosstandart, USSR, proposes that the work proceed in the following sequence:

7.1. A number of the thermocouples will be fully calibrated in the range of temperatures 300-1800°C. Calibration can be made by the reference point method and by the intercomparison method. It is desirable to also estimate the inhomogeneity of the thermocouples.

7.2. It is undesirable that the thermocouples selected for shipment be subjected to long exposures to heat. However, in order to have confidence in the ascribed calibration values, calibration of these thermocouples must be made at the reference points such as points of zinc, tin, gold, palladium, platinum.

7.3. The thermocouples (preferable five in number) are shipped for intercomparison to the laboratory of the other side with the following data:

- a. Composition of thermoelectrodes
- b. data on annealing of thermoelectrodes and thermocouples
- c. calibrated values of thermocouples at reference points
- d. information on the purity of metals used for the reference points
- e. data on the depth of immersion of thermocouples in the oven.

7.4. The laboratory of the other party will work for the most part (full calibration in the range of 300-1800°C) with two of the exchanged thermocouples. The other thermocouples will be held in reserve. If the calibration is done with different methods, different thermocouples can be used with different methods.

7.5. Returned thermocouples should be accompanied by documents containing the following data:

- a. calibrated values of thermocouples. Here the thermoelectric force must be given at the reference points.
- b. information on the duration of exposure of thermocouples

to the calibrating temperatures.

c. data on the depth of immersion of thermocouples in the oven and on the temperature gradients in the ovens.

d. purity of metals, used for the reference points

e. brief description of electrical measuring equipment used

f. any other information that could affect the results or precision of calibration of thermocouples and a brief analysis of the results obtained.

7.6. Upon return, the thermocouples undergo a second calibration in their own laboratory and the data obtained, together with a short analysis, are sent to the other party.

The work also will include exchange of specifications and scientific and technical documentation concerning the properties of thermoelectrode materials, construction of thermocouples and of the ovens used in the calibration of thermocouples.

Topic 8. Intercomparison of standard thermoelectric voltage converters.

Gosstandart, USSR, agrees with the NBS, USA, proposal to conduct intercomparison of thermoelectric voltage converters (up to 1 MHz) within the framework of BIPM where this work is being carried out by USSR, Japan, Great Britain, and USA.

Responsibility for the implementation of Topic 8 has been given to VNIIM, Mendelayev on the USSR side. Responsible scientist: Professor T. B. Rozhdestvenskaya.

Topic 9. Refinement of physical constants.

Gosstandart, USSR, agrees with the USA/NBS, proposal on the desirability of discussing in the course of exchange, questions associated with the planning of experiments and the conducting of analysis of the results of determination of some physical constants and could send its specialists to NBS in the fourth quarter of 1974 -- first quarter of 1975 -- for this purpose.

Concerning the questions proposed for discussion at a meeting of specialists, Gosstandart feels that:

It is important for us to refine a number of constants associated with the reproduction of the Absolute Volt. Among these constants are the

Rydberg constant, fine structure constant, Avogadro number and the ratio of the rest mass of the proton to the rest mass of the electron.

It appears that the Rydberg constant, known with an error of a few parts in 10<sup>6</sup>, does not, at the present time, limit the accuracy of the volt. This must be particularly emphasized in view of the work being done in a number of laboratories on the refinement of this constant by using lasers.

As far as Avogadro's number is concerned, in spite of its importance, Gosstandart is not yet ready to measure its value and does not intend to start the work before 1976.

At the present time Gosstandart would like to propose cooperation in the determination of the fine structure constant and the ratio of proton to electron masses and to start this work in the fourth quarter of 1974.

Concerning cooperation on the agreement for values of physical constants, Gosstandart has a number of remarks concerning the choice and evaluation of data based on the material obtained by Cohen and Taylor in 1973.

We will present the results of our work on the reconciling the differences at CODATA in mid-1975 and hope that a comparison of our results with the results of Cohen and Taylor will be of use.

Responsibility for the implementation of Topic 9 has been given to VNIIM, Mendeleev on the USSR side. Responsible scientist: Candidate of Technical Sciences, K. A. Krasnov.

Topic 10. Exchange of standard reference materials.

Gosstandart, USSR, finds it impossible to start in 1974 cooperation with NBS on the development of standard reference materials for clinical measurements and environmental protection.

Part IV

Topic 1. Automated information and control systems in the area of standardization, and Topic 2(a). Use of computers for the control of the process of standardization.

Responsible scientist for this topic is V. I. Romanov, Head of GIVTS.  
Topic 2(b). Use of computers in the development of standards and calibration of measuring systems.

Responsible scientists for this topic are: scientific staff member of GIVTS, V. N. Shurupov, and staff member of VNIIMS, Candidate of Technical Sciences, S. S. Gusev.

Topic 2(c). Use of computers and automation in planning and industrial processes.

Responsible scientist is Yu. Shirokiy, staff member of VNIIMASH.

Part V Cooperation in the area of standard reference data.

Gosstandart, USSR, would like to propose the cooperation begin in 1974 on "Determination, refinement and correlation of values of thermophysical properties of the most important substances as well as of the most important chemical kinetic data."

Responsibility for the implementation of work in Part V has been given to VNIIMS. Responsible scientist: Candidate of Technical Sciences, S. S. Gusev.



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USAF POSITION ON COMMUNIST BLOC VISITORS

Visitors: Standards and Standardization

Project and Sponsor:

LGZ	AFSC	FTD	AF/CVAFI Other
	1	N/O	1

8. USAF also provides the following:

Opinion # 36-5 Due 3 Jun 74

Passed to IIAGE

Classified by CIA/IIAGF  
EXEMPT FROM GENERAL DECLASSIFICATION  
SCHEDULE OF EXECUTIVE ORDER 11652  
EXEMPTION CATEGORY 2  
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( SECURITY CLASSIFICATION OF ATTACHED MATERIAL SHOULD BE CIRCLED TOP AND BOTTOM )

## ACTION SHEET

DATE REC'D IN IC

IC #

DESCRIPTION OF ATTACHED MATERIAL:

TYPE OF MATERIAL

DATED

FROM

TO

SUBJECT

DELIVERED TO

DEADLINE DATE

FOLLOW-UP DATE

31 May

## DIVISION ROUTING

TO	DATE	ACTION REQUIRED	INIT.	COMMENTS*
1. C/ETB	20 May			
2.	5/21/74			
3.				
4. C/EEB	22 May			
	23 May			
5.				
6. Exchange Staff				

Your opinion is requested on  
this proposed visit/exchange:

Objection: Yes ( ) No (X)

Following itinerary additions/  
deletions are recommended:

Requirements will ( ) will not (X)  
be written if visit/exchange  
materializes.

GTB  
EEB

INSTRUCTIONS: Under each comment a line should  
be drawn across sheet and each comment numbered  
to correspond with the number in the "TO" Column.

\* If comments bear a higher classification than  
the attached material, the security classi-  
fication of this sheet be changed.